

12

scanning line located on the outermost position on the scanning start side of scanning signal and the dummy scanning line about the additional capacitance line and the symmetry of other adjacent scanning lines about the additional capacitance line are substantially equalized, thereby ensuring higher display quality.

Additionally, the liquid crystal display devices of Embodiments 1 to 6 have a so-called Cs on Com structure in which the additional capacitance Cs between the pixel electrode 6 and the additional capacitance line 10 is formed on the common line 9. Hence, such a liquid crystal display device can be easily driven. Furthermore, in the Cs on Com structure, since the parasitic capacitance between the gate and source lines is reduced, it is possible to decrease shadowing (particularly in a lateral direction (scanning direction)). Consequently, the present invention can achieve a liquid crystal display device which is easily driven and has high display quality as well as the effect (an improvement of reliability) produced by the above-mentioned dummy scanning line.

The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

What is claimed is:

1. A liquid crystal display device comprising:
  - a pair of substrates sandwiching liquid crystals therebetween;
  - a plurality of scanning lines to which scanning signals are successively applied;
  - a plurality of signal lines to which data signals are successively applied, said signal lines intersecting said scanning lines at right angles;
  - a switching element which is arranged in a vicinity of each of intersections of said scanning lines and said signal lines, and electrically connected to both of said scanning and signal lines;
  - a pixel electrode connected to each of said switching elements;  
said scanning lines, signal lines, switching elements and pixel electrodes being formed on one of said substrates,  
a common electrode formed on the other of said substrates  
so that said common electrode faces said pixel electrode with said liquid crystals therebetween;
  - a common line [for supplying a] to which a common signal [to said common electrode] is applied:
  - a pixel capacitance, one of electrodes of said pixel capacitance [formed by said pixel electrode] being connected to said common line; and
  - a dummy scanning line formed outside of one of said scanning lines located at an outermost position on either a scanning start side or a scanning end side of scanning signal, for producing a parasitic capacitance between said dummy scanning line and the pixel electrode connected to the scanning line located at the outermost position.
2. The liquid crystal display device according to claim 1, wherein said dummy scanning line is arranged at a pitch equal to a pitch of other adjacent scanning lines so that said pixel electrode is located between said dummy

00000000000000000000000000000000

scanning line and the scanning line located at the outermost position.

3. The liquid crystal display device according to claim 1, wherein an inter-layer insulating film is formed over said switching elements, scanning lines and signal lines, and each of said pixel electrodes overlaps said dummy scanning line and adjacent scanning line corresponding to said pixel electrode with said inter-layer insulating film therebetween.
4. The liquid crystal display device according to claim 1, further comprising signal input means for inputting a signal to said dummy scanning line.
5. The liquid crystal display device according to claim 4, wherein said signal input means inputs a signal to said dummy scanning line before an output of a scanning signal to be input to the scanning line located at the outermost position on the scanning start side of scanning signal.
6. The liquid crystal display device according to claim 4, wherein said signal input means inputs a signal to said dummy scanning line after an output of a scanning signal to be input to the scanning line located at the outermost position on the scanning end side of scanning signal.
7. The liquid crystal display device according to claim 4, wherein said signal input means inputs a scanning signal generated exclusively for said dummy scanning line to said dummy scanning line.
8. The liquid crystal display device according to claim 4, wherein said signal input means inputs to said dummy scanning line a scanning signal to be input to the scanning line located at the outermost position on either the scanning start side or the scanning end side of scanning signal.
9. The liquid crystal display device according to claim 4, wherein said signal input means inputs to said dummy scanning line the common signal to be input to said common electrode.
10. The liquid crystal display device according to claim 4, wherein said signal input means inputs to said dummy scanning line a scanning signal of a level which does not turn on said switching elements formed on said substrate.
11. A method of driving a liquid crystal display device including a plurality of scanning line to which scanning signals are successively applied, a plurality of signal lines to which data signals are successively applied, a switching element which is arranged in a vicinity of each of intersections of the scanning lines and the signal lines and connected to both of the scanning and signal lines, a pixel electrode connected to each of the switching element, a pixel capacitance formed by the pixel electrode, a common electrode

00273870 - 02022E

which is arranged to face the pixel electrode, liquid crystals placed between the pixel electrode and the common electrode, and a dummy scanning line formed outside of one of the scanning lines located at an outermost position on either a scanning start side or a scanning end side of scanning signal to produce a parasitic capacitance between the dummy scanning line and the pixel electrode connected to the scanning line located at the outermost position, said method comprising the steps of:

supplying the scanning signal and the data signal to the switching element and supplying a common signal to one of electrodes of the pixel capacitance so as to change an electric potential between the pixel electrode and the common electrode and vary a transmittance of the liquid crystals; and

inputting a signal to the dummy scanning line.

12. The method of driving the liquid crystal display device according to claim 11,

wherein the signal to be input to the dummy scanning line is output before an output of a scanning signal to be input to the scanning line located at the outermost position on the scanning start side of scanning signal.

13. The method of driving the liquid crystal display device according to claim 11,

wherein the signal to be input to the dummy scanning line is output after an output of a scanning signal to be input to the scanning line located at the outermost position on the scanning end side of scanning signal.

14. The method of driving the liquid crystal display device according to claim 11,

wherein the signal to be input to the dummy scanning line is a scanning signal generated exclusively for the dummy scanning line.

15. The method of driving the liquid crystal display device according to claim 11,

wherein the signal to be input to the dummy scanning line is a scanning signal to be input to the scanning line located at the outermost position on either the scanning start side or the scanning end side of scanning signal.

16. The method of driving the liquid crystal display device according to claim 11,

wherein the signal to be input to the dummy scanning line is the common signal to be applied to the common electrode.

17. The method of driving the liquid crystal display device according to claim 11,

wherein the signal to be input to the dummy scanning line is a scanning signal of a level which does not turn on the switching elements.